



UNITED STATES PATENT AND TRADEMARK OFFICE

eln

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/518,880

08/08/2005

Hans-Joachim Barth

10808/158

5306

48581 7590 04/13/2007
BRINKS HOFER GILSON & LIONE
INFINEON
PO BOX 10395
CHICAGO, IL 60610

EXAMINER

GOODWIN, DAVID J

ART UNIT

PAPER NUMBER

2818

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

04/13/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/518,880

Applicant(s)

BARTH ET AL.

Examiner

David Goodwin

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-32 and 34-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-32 and 34-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 25-28, 31, 32, 34 –37, 39, 41-44, 47, 49, and 50 are rejected under 35 U.S.C. 102(e) as being anticipated by Hsu (US 6,555,467).
3. Regarding claim 25.
4. Hsu teaches a semiconductor arrangement. Said arrangement comprises a substrate (12) (fig 1) (column 2 lines 20-30). A layer arranged on the substrate (12). The layer including a first subregion (18) and a second subregion (42, 72) arranged proximate the first subregion (18) (fig 7). The first subregion (18) being a decomposable material (column 2 lines 30-60) and the second subregion (42) having a structure of non-decomposable material (column 3 lines 10-40). A covering layer (82) positioned on the layer (column 4 lines 55-65). An electrically conductive passivation layer (40, 70) positioned between the structure of the non-decomposable material and the covering layer (82) (fig 11) (column 4 lines 50-65). Wherein the decomposable material (18) is diffusible through the covering layer (82) (fig 11,12) (column 5 lines 1-5).
5. Regarding claim 26.

6. Hsu teaches an intermediate layer (16) between the substrate (12) and the layer of decomposable material (18) (fig 7) (column 2 lines 30-40).
7. Regarding claim 27.
8. Hsu teaches that the covering material (82) comprises a dielectric material (fig 11) (column 4 lines 55-65).
9. Regarding claim 28.
10. Hsu teaches that the covering layer comprises silicon oxide (column 4 lines 55-65).
11. Regarding claim 30.
12. Hsu teaches that the decomposable material (18) is diffusible through the covering layer (82) (fig 11,12) (column 5 lines 1-5).
13. Regarding claim 31.
14. Hsu teaches that the structure of the non-decomposable material (42, 72) is an electrically conductive material (column 3 lines 25-45).
15. Regarding claim 32
16. Hsu teaches that the structure of the non-decomposable material (42, 72) is copper (column 3 lines 25-45).
17. Regarding claim 34.
18. The nondecomposable structure comprises a dielectric material (80) (column 4 lines 50-60).
19. Regarding claim 35.

Art Unit: 2818

20. The nondecomposable structure comprises a silicon nitride (80) (column 4 lines 50-60).

21. Regarding claim 36.

22. Hsu teaches that the decomposable material (18) is thermally decomposable (column 5 lines 1-5).

23. Regarding claim 37.

24. Hsu teaches that the thermally decomposable material (18) is polynorborene (column 2 line 30-50).

25. Regarding claim 39.

26. At least one supporting structure (42, 72) is formed in the layer arranged between the substrate (12) and covering layer (82) (fig 11).

27. Regarding claim 41.

28. A protective passivation layer (40) at least partially surrounds the structure (fig 10).

29. Regarding claim 42.

30. Hsu teaches a method of making a semiconductor arrangement. Said method comprises a substrate (12) (fig 1) (column 2 lines 20-30). Forming a layer arranged on the substrate (12). The layer including a first subregion (18) and a second subregion (42, 72) arranged proximate the first subregion (18) (fig 7). The first subregion (18) being a decomposable material (column 2 lines 30-60) and the second subregion (42) having a structure of non-decomposable material (column 3 lines 10-40). Forming a covering layer (46, 82) positioned on the layer (column 4 lines 55-65). Forming an

Art Unit: 2818

electrically conductive passivation layer (40, 70) positioned between the structure of the non-decomposable material and the covering layer (82) (fig 11) (column 4 lines 50-65).

Wherein the decomposable material (18) is diffusible through the covering layer (82) (fig 11, 12) (column 5 lines 1-5).

31. Regarding claim 43.

32. Hsu teaches the decomposable material is encased in a casing comprising the substrate (12), the non-decomposable material (42, 72) and the covering material (82) (fig 10).

33. Regarding 44.

34. Hsu teaches that the decomposable material (18) is thermally decomposable (column 5 lines 1-5).

35. Regarding claim 47.

36. Hsu teaches depositing and patterning the decomposable material (18) on the substrate (12) (fig 6) (column 3 lines 10-30). Depositing (the material of the structure (42, 72) on the substrate (fig 7). Planarizing the surface of the deposited decomposable material and material of the structure (42) (fig 7) (column 3 lines 30-40).

37. Regarding claim 49.

38. Hsu teaches that at least one additional layer stack is formed on the covering layer (fig 11). The additional layer stack having an additional covering layer on an additional layer comprising decomposable material and a useful structure (fig 11, 12).

39. Regarding claim 50.

Art Unit: 2818

40. Hsu teaches that the structures that are separated by a covering layer (46) are coupled by at least one contact hole being introduced into the covering layer and being filled with electrically conductive material (fig 11).

41. Claims 42 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Grill (US 6,413,852).

42. Regarding claim 42.

43. Grill teaches a method of making a semiconductor layer arrangement. Said arrangement comprises a providing substrate (100) (fig 1a) (column 4 lines 45-65). Forming a layer arranged on the substrate (100). The layer including a first subregion (220) and a second subregion (185) arranged proximate the first subregion (220) (fig 4a) (column 5 lines 30-50). The first subregion (220) being a decomposable material (column 6 lines 30-65) and the second subregion (185) having a structure of non-decomposable material (column 5 lines 30-60). Forming a covering layer positioned on the layer (fig 4b) (column 9 lines 5-30). Forming an electrically conductive passivation layer (440, 450) positioned between the structure of the non-decomposable material and the covering layer (fig 4b) (column 9 lines 5-30). Wherein the decomposable material (220) is diffusible through the covering layer (fig 4b, 4c) (column 2 lines 20-40).

44. Regarding claim 45.

45. Grill teaches the structure (185) comprises copper (column 5 lines 40-55). The structure is at least partially sheathed (450, 440) with Co-P Co-W-P by electroless deposition (column 9 lines 15-35).

Response to Arguments

46. Applicant's arguments filed 2/5/07 have been fully considered but they are not persuasive.

47. The applicant argues that the conductive passivation layer (40, 70) is not between the non-decomposable material and the covering layer.

48. The applicant will note in figure 11 that the conductive passivation layer (40, 70) is clearly between the non decomposable material (72) and the covering material (82). The applicant does not limit along which line between is considered, therefore as the applicant can clearly see along an angled line running from the non decomposable material to the covering layer the conductive passivation material lies.

49. The applicant argues that silicon nitride is insulative and not conductive.

50. The examiner appreciates that the applicant understands this.

51. The applicant argues that Hsu does not teach polynorbornene but rather a polymer of butylnorbornene.

52. The examiner notes that a polymer of a nornobornene material, butylnorbornene, is a polynorbornene.

53. The applicant argues that Grill does not teach that the protective coatings are conductive.

54. As the applicant will note the protective coatings are plated metals (column 9 lines 20-30). Metals are conductive.

Conclusion

55. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Goodwin whose telephone number is (571)272-8451. The examiner can normally be reached on Monday through Friday, 9:00am through 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571)272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2818

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJG



Andy Haugoh
Primary Examiner